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**Original Communications.**

THE RESULT OF TWO POST-MORTEM EXAMINATIONS, PERFORMED AT THE SAME TIME, SIDE BY SIDE, IN THE SAME ROOM, THE ONE ILLUSTRATING THE PATHOLOGICAL ANATOMY OF MALARIAL FEVER, AND THE OTHER OF YELLOW FEVER.

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THE following post-mortem examinations performed upon a subject of malarial fever, and upon one of yellow fever, simultaneously, in the dead house of the Charity Hospital of New Orleans, are selected from the records of the numerous autopsies performed in several of the Southern States during a series of years, in the investigations which I have instituted upon the nature and treatment of these diseases.

**CASE.—Pernicious Malarial Fever.**—Native of Austria, stout, full form; entered Ward 14, Charity Hospital, in a comatose condition; complexion, jaundiced; pulse, rapid and feeble; temperature of extremities, depressed, of head and trunk, elevated several degrees above the normal standard; respiration, labored and embarrassed; urinary excretion abundant and without albumen.

Sinapisms and the free use of quinine and stimulants failed to arouse the patient, and death took place within 24 hours after his entrance into the hospital. Died October, 1871.

**Autopsy, twelve hours after Death.**—Exterior.—Skin jaundiced, but to a much less degree than in yellow fever. Skin of dependent portions of body mottled, from capillary congestion, but to a less marked degree than in yellow fever. The cut surface of the muscles presented a purplish hue, and the change to the arterial hue when exposed to the atmosphere, was much slower and less perfect than in yellow fever. Putrefactive changes slow.

**Head.**—Bloodvessels of brain congested, but no structural alterations of the membranes or structures of the brain were observed.

**Heart.**—Normal in color, presenting the deep red, muscular appearance of the healthy human heart. Muscular fibres of heart, firm and of normal appearance under the microscope. No deposits of oil, as in yellow fever, in the muscular structure of the heart. Cavities of the heart contained dark grumous blood, and large lami-

nated, light yellow, fibrous concretions, attached to the columnæ carneæ and chordæ tendineæ, and sending off branches into the pulmonary arteries.

Lungs.—Dependent portions congested with blood; otherwise normal.

Stomach.—Contracted; contained a small quantity of mucus, colored yellow by bile. Mucous membrane slightly congested, and ecchymosed. Reaction of stomach, acid.

Intestines.—Normal in appearance.

Liver.—Upon the exterior, slate-colored; and when cut, bronze within. Under the microscope, the liver presented a pale appearance, with little oil or granular albuminoid matter. The liver, especially in the peripheral portion of the lobules, contained masses of the coloring matter of the blood of various sizes. The peculiar color of this liver, could, to a certain extent, be extracted by boiling water. The filtered decoction was of a brownish mahogany color, as if it contained the coloring matter of the blood, whilst the decoction of the yellow fever liver, was of a bright golden color.

The blood, issuing from the cut surface of the liver, remained of a dark purplish hue, and did not change to a brilliant scarlet, as in the yellow fever liver. Careful examination showed that the dark color of this liver was due to several causes, as the deposits of black pigment matter in the portal and hepatic capillary networks, the dark, unchanging nature of the portal and hepatic blood, and the deep greenish color of the bile.

Upon chemical examination, the liver was found to contain animal starch, but no grape sugar.

Gall-bladder.—Distended with more than 1000 grains of thick bile, having a high specific gravity, viz.: 1036. The bile is more abundant in malarial fever, and is of a deeper color, and more inclined to the formation of lumpy masses than in yellow fever. In thin layers, and when added to water, it presents a more decided green color, whilst in yellow fever the bile gives a golden yellow color in thin layers, and when added to water. The difference in the color of the biliary secretion in the two diseases, may be connected with the differences of color in the color of the liver, bile and blood.

Under the microscope (one-fifth inch, Smith & Beck, London), the granular concretions in the bile were found to be composed chiefly of epithelial cells, from the mucous membrane of the gall-bladder, cells from the biliary ducts, and casts of the biliary tubes.

Spleen.—Enlarged and softened. It was impossible to remove the spleen without rupturing the capsule. It resembled a bag filled with softened mud.

Under the microscope, the splenic mud was found to consist of numerous colored corpuscles, variously altered, and masses of pigment matter. No fine oil-globules were observed in the spleen.

Kidneys.—Normal in appearance and structure.

Urinary Bladder.—Distended with reddish brown urine, of acid reaction. Urine free from albumen and urinary casts. Urea abundant, as in the urine of fever. Chloride of sodium in normal amount. There is no diminution of chlorine and chlorides in the urine of malarial fever, as in that of pneumonia. When the chlorides diminish in the urine of this disease, such diminution is clearly referable to fasting.

CASE.—*Yellow Fever*.—Stout German, attacked in the full vigor of health. Suppression of urine during the last forty-eight hours before death. Copious ejections of black vomit. Reaction of black vomit strongly *alkaline*. Black vomit contained *urea* and *ammonia*. Under the microscope (one-fifth to one-eighteenth objectives), the black vomit was found to contain numerous altered blood-corpuscles. No animalculæ or fungi were observed when the black vomit was collected in clean vessels and examined immediately after its ejection from the stomach. The urine collected during the stage of fever, and calm, or depression, presented a light yellow color, and was loaded with albumen and casts of the tubuli uriniferi. Death preceded by symptoms of uræmic and biliary poisoning, jaundice, intoxication, delirium, coma and convulsions. Patient died on the sixth day of the disease, October, 1871.

*Autopsy, three hours after Death*.—Exterior.—Full form, bloated, swollen countenance. Skin of face and upper portions of trunk, of a golden yellow color. Dependent portions of body of a mottled, purplish and yellow ecchymosed appearance. Black vomit running from corners of mouth, and trickling down sides of face and neck. When the muscles were cut, a large quantity of thick blood escaped, which changed to a bright scarlet hue upon exposure to the atmosphere.

Putrefactive changes rapid; the body emits a foul, disgusting odor. The body examined in the preceding observation, although it has been nine hours longer in the dead house, is comparatively free from bad odor. In many cases of yellow fever, especially when the functions of the kidneys have been arrested before death, the vascular system is distended with blood, and the putrefactive changes take place with great rapidity and energy, and sometimes even appear to commence before death, the body exhaling a disagreeable odor.

Head.—Beyond congestion of the bloodvessels of the membranes and structure of the brain, no marks of inflammation or structural alteration were observed.

Heart.—Pericardium greatly congested; the vessels, even the minute capillaries, presenting a beautiful, arborescent appearance, and loaded with colored corpuscles. Heart of a pale yellow and brownish yellow color, as if undergoing fatty degeneration. Structure of heart, flabby and somewhat softened. Numerous oil-globules de-

posited within the muscular fibrillæ of the heart. Cavities of the heart contained dark fluid blood free from fibrinous concretions. Blood contained *urea*, and carbonate of ammonia in abnormal quantities. Bile also was present in considerable quantities. When a drop of the blood was allowed to fall upon a piece of white filtering paper, the central portion in which remained the colored corpuscles, was of a bright red color, while around this extended, by capillary attraction, a bright golden-colored areola. Urea and bile were detected in considerable quantities in the brain, heart, spleen and kidneys. The urea was found also in abnormal quantities in the liver. The brain appeared upon analysis to contain the largest proportion of urea. The fibrin of the blood was almost entirely destroyed, being not more than 0.1 in 1000 parts of blood. Upon standing, the colored blood-corpuscles rapidly disappeared, apparently from the effects of the bile and ammonia.

That bile has the effect of dissolving the colored corpuscles, I have determined by actual experiment. In such experiments, the blood of certain cold-blooded animals, in which the colored corpuscles are large, is the best; the blood of the Congo snake, a reptile which is quite frequently captured in the gutters of the streets of New Orleans, is to be preferred, as the colored blood-corpuscles are of an extraordinary size. I have shown, more than sixteen years ago, that it is possible to demonstrate, by the employment of certain re-agents, under the microscope, that the blood-corpuscles in these cold-blooded animals have a distinct *cell-wall*. When the bile of yellow fever and of other diseases is added to the blood of the Congo snake or of other animals, the outer cell-wall is rapidly destroyed, and the nucleus liberated; and if the bile be added in sufficient quantities, the nucleus is in like manner dissolved.

Lungs.—Dependent portions greatly congested with blood; otherwise normal.

Stomach.—Mucous membrane of stomach intensely congested, softened and eroded. Reaction of the mucous membrane of the stomach strongly alkaline. The stomach contained sixteen ounces of dark grumous blood, or black vomit, the reaction of which, although removed only three hours after death, was *strongly alkaline*; and ammonia was present in such large quantities that when a rod, dipped in hydrochloric acid, was held over the mucous membrane of the stomach, or over the black vomit, dense fumes of chloride of ammonium were formed, as if the rod had been held over a bottle containing liquor ammoniæ. Chemical analysis revealed the presence of *ammonia*, and, also, of *urea*, in the black vomit.

Under the microscope (one-fifth to one-eighteenth objectives), the black vomit was found to consist almost entirely of colored corpuscles, broken capillaries, and cells of the mucous membrane of the stomach, floating in an alkaline serous fluid.



**Intestines.**—Dark-colored and distended with gas.

**Liver.**—Yellow color, resembling that characteristic of fatty degeneration of this organ. Under the microscope, the texture of the liver was found to be infiltrated with oil. The liver cells were large, distinct, swollen, and contained much golden-colored oil, in the form of distinct globules of various sizes.

Chemical analysis revealed the presence of fat in abnormal quantities, and also of urea, and of animal starch and grape sugar.

The liver of yellow fever, as far as my observations extend, and according to the observations of Louis and many others, is of a bright yellow color. It is probable that this color, as in the case of that of the malarial liver, varies with the length of the attack and the effects of previous diseases.

The decoction of this liver was of a bright golden color, and very different from the dark, brownish red of the decoction of the malarial liver. The golden color of this yellow-fever liver could be extracted, both by alcohol and water.

This liver was firmer and harder than that of the malarial liver in the preceding case; it contained much less blood, and was much less readily acted upon by liquor potassæ and acids. Liquor potassæ readily dissolved the malarial-fever liver, and the decoction presented the appearance of venous blood, whilst no such effect was produced by this re-agent upon the yellow-fever liver.

**Gall-bladder.**—Contained only 100 grains of thick bile, while the gall-bladder in the case of malarial fever contained 1000 grains and over. In yellow fever, the gall-bladder is generally relaxed, and only partially filled, and rarely contains more than 120 grains of bile. In yellow fever, the vomiting is rarely bilious, unless in the very commencement of the disease. The stomach and small intestines are rarely, if ever, discolored by bile in yellow fever, whilst in malarial fever it is common to find the gastro-intestinal mucous membrane thus discolored.

**Spleen.**—Normal in size and appearance. In many cases of yellow fever, the spleen is neither enlarged nor softened, nor altered in appearance, either upon the exterior or within. There appears to be no special alteration or destruction of the colored blood-corpuscles, in the spleen of yellow fever, as in that of malarial fever.

**Kidneys.**—Brownish yellow color. Kidneys contained much free fat. When thin sections were made with Valentine's knife, and examined under the microscope (one inch, one-half, one-third, one-fourth, one-fifth, one-sixth inch objectives), the Malpighian corpuscles and tubuli uriniferi were found to be filled with oil-globules, detached epithelial cells and yellow granular albuminoid matter.

The sudden suppression of urine in yellow fever, which is even of more fatal import than jaundice and black vomit, is due, as far as my observations extend, to those peculiar structural alterations which we have just described, rather than to congestion of the capillaries of these organs.

If suppression of urine in yellow fever were simply due to capillary congestion, or defective innervation of the kidneys, it might be possible to re-establish the excretion by the use of diuretics; but when suppression of urine is once established in this disease, it is permanent, and, as far as my experience extends, cannot be removed by any means heretofore applied. My observations furnish an explanation of the universally fatal character of urinary suppression in yellow fever.

The desquamation of the excretory cells of the tubuli uriniferi, and the impaction of the Malpighian corpuscles and tubuli uriniferi, with granular albuminoid and fibroid material, is the characteristic lesion of these organs in yellow fever in cases of urinary suppression.

In every case of yellow fever, the kidneys are more or less involved, as is manifest from the appearance of albumen and urinary casts and cells in the urine.

Many of the peculiar symptoms of this disease, as, the rapid lowering of temperature, slow pulse, intoxication, coma, delirium and convulsions, the sudden deaths, and even the supervention of copious hæmorrhages from the stomach and bowels, are referable to the lesions of the kidneys, established by my investigations.

Suppression of urine favors the supervention of black vomit by the effects of the retained urinary constituents and the products of their decomposition in the blood, and by the consequent obstruction of the bloodvessel system with altered blood, the alkalinity of which has been greatly increased.

Urinary bladder.—Contained only one teaspoonful of light yellow urine, which represented the whole amount excreted during the last forty-eight hours of life. Urine loaded with albumen. Casts, kidney cells and granular albuminoid matter.

*New Orleans, La., June 6, 1873.*

SECONDARY DIVERGENT STRABISMUS, CAUSED BY AN OPERATION FOR CONVERGENT STRABISMUS AND EXISTING FOR THIRTY YEARS; CURED BY TRANSPLANTATION OF THE INJURED MUSCLE AND DIVISION OF ITS ANTAGONIST.

By HASKET DERBY, M.D., Boston.

It has been justly observed that the cosmetic effect of the operation for secondary strabismus may, as regards facial expression, be considered one of the triumphs of surgery. I have thought, therefore, that the following case might possess interest, even for those not specially interested in ophthalmic matters.

A lady, now fifty years old, was operated on for convergent strabismus of the left eye, at the age of twenty. Her condition, when she consulted me in January last, was substantially what it had been for the past thirty years, and may be best appreciated by a glance at Fig. 1. The left eye diverged some three and a half lines. Its motion inward was greatly restricted, the utmost effort of the inter-

nal rectus only sufficing to bring it one line short of the middle of the palpebral aperture. The vision of this eye was extremely imperfect, fingers being counted at six feet, while no letter of the test card could be recognized. The right eye was hypermetropic  $\frac{1}{2}$ , and had normal vision. On some occasions, annoying diplopia would be experienced.



FIG. 1.



FIG. 2.

For the relief of this deformity, the operation of simple division of the external rectus had been already proposed to the patient. The injudiciousness of this advice can best be shown by quoting the classic words of von Graefe:—

"For all considerable diminutions of mobility, or for entire loss of the same, bringing forward the muscle is the only proper remedy. Even if we succeeded by, for instance, partial excision or excessive setting back, in so reducing the strength of the abducens as to bring about a symmetrical relation between the amount of movement outwards and the amount of movement inwards, should we be entitled to regard this as a cure, properly so called? Inasmuch as the existing immobility depended, not on contraction of the antagonist, but solely on the fact that the activity of the internus had been circumscribed by too extreme a recession or imperfect union with the bulb, it is evident that the abducens must be brought into a like condition in order to establish an equilibrium, and what should we then have accomplished? We should have an eyeball immovable in two directions, and more prominent than before. This prominence of the eyeball gives a goggling expression, and thus is often more distressing than the deviation itself; while, in connection with the sinking of the caruncle, it produces a cosmetic effect in no ways allied to that of ordinary divergent strabismus. A correction consisting in the setting back of the antagonist would, even if it were practica-

ble, seem here less desirable than in cases of complete paralysis."\*

The following operation was consequently performed, January 4th of the present year.

The patient was etherized, and, beginning at the inner edge of the cornea, a broad flap of conjunctiva was dissected back towards the caruncle, a distance of six lines. Care was taken to thoroughly remove the subconjunctival tissue, in order that nothing might prevent the healing of the muscle at its new point of insertion. The internal rectus was found reduced in size, attached far behind and somewhat above its old position. It was divided at its insertion, dissected away from its attachments, brought forward and laid upon the cornea, spread out so as to half cover it. In this position it was secured by two sutures through the conjunctiva, above and below the centre of the cornea.

An incision was now made over the insertion of the externus, and this brought into view. A single stout thread was armed with a needle at either end. One was passed into the centre of the insertion, as near the eyeball as possible, and made to emerge through the upper edge of the muscle. The second was passed in at the same point and brought out at the lower edge. The muscle being next divided, just outside the thread, the eyeball was moved readily in any direction by means of the two threads gathered into the hand of the operator. It was rotated as far inwards as possible, so that the edge of the cornea touched the caruncle, and the ends of the thread secured firmly to the opposite temple. A compressive bandage was applied.

Thirty hours later, there had been but trifling pain, and I removed the thread from the temple. Jan. 6th, the remaining sutures were extracted. The muscle, of course, receded in its centre, and left the cornea free. The patient rapidly convalesced, and returned to her home in the West, Feb. 12th. The second engraving shows the condition of the eye. No strabismus existed, and there was excellent motion in every direction.

The operation will be observed to have been a combination of the two methods of "sewing forward" and "transplanting forward" (*Vornähung* and *Vorlagerung*).

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WET-NURSING.—The average mortality of infants one year old throughout France is 18 per 1,000. In the ten departments which chiefly receive *les petits Parisiens*, the infants whom fashion and morality in France consign to rural wet-nurses, the mortality is 51.68 per 100. In the department of la Creuse, where people marry early and mothers nurse their own children, the mortality is 12 per cent.; in that department (spite of much emigration), births exceed the deaths; in all others the deaths exceed the births; and a gradual depopulation is proceeding in France, which excites the liveliest apprehension of the government.—*British Medical Journal*, May 17, 1873.

\* Archiv für Ophthalmologie, 3, 1, 371.

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## Progress in Medicine.

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### REPORT ON MEDICAL CHEMISTRY.

By EDWARD S. WOOD, M.D.

[Concluded from p. 11.]

**Phosphorus Poisoning.**—From the experiments of Dr. DYBKOWSKY (*Beitrag zur Theorie der Phosphorvergiftung*. Hoppe-Seyler, *Med. Chem. Untersuchungen*, Erstes Heft, 1866) it appears that the action of phosphorus in cases of poisoning must be explained chiefly by the formation of phosphoretted hydrogen, and not by the absorption of the phosphorus as such, nor by its oxidation in the stomach or blood to the form of phosphoric acid. The mistake of those authors who state that phosphoretted hydrogen is not poisonous, has resulted from the fact that they experimented with that variety of the gas made from the phosphide of calcium, which is spontaneously inflammable, so that in reality the products of its combustion, phosphoric acid and water, were administered, and not the gas itself. Dr. Dybkowsky, however, administered phosphoretted hydrogen made by reduction from phosphorous acid, by which a non-inflammable variety is produced, which, administered to animals by injection into the rectum, is rapidly fatal, and gives rise to symptoms and *post-mortem* appearances similar to those produced by phosphorus itself. Moreover, it was proved that phosphoretted hydrogen is formed by placing phosphorus in blood, and it is probable that it is produced in the intestine from phosphorus by contact with nascent hydrogen. Phosphoretted hydrogen was also eliminated with the breath in certain cases of poisoning by phosphorus, as shown by the reducing action of the breath upon a solution of nitrate of silver, a reaction caused only by phosphoretted hydrogen and free phosphorus, the latter being found absent by the non-luminosity of the breath. At the same time, it is certain that a very small amount of the phosphorus ingested may become oxidized in the alimentary canal, and the phosphoric acid thus produced cause slight irritation, or even corrosion, if oxidized at the expense of the oxygen of the tissues, as happens in rare cases, when bits of the phosphorus adhere to the mucous membrane of the stomach or œsophagus. Again, it is certain that a very small portion of the phosphorus may be absorbed as such, since it is slightly volatile at the temperature of the body, and can be eliminated with the breath unchanged, since, in a few cases in animals poisoned by phosphorus which was introduced into the stomach, the œsophagus having been previously cut and tied, the breath was luminous. From these facts, it appears that the action of phosphorus is almost entirely due to the action of phosphoretted hydrogen, which may be formed either in the intestine or in the blood from that portion which is absorbed unchanged. Its action when in the blood is not quite clear, although a part may be oxidized at the expense of the oxygen of the blood, and a portion is eliminated by the lungs unchanged. If phosphoretted hydrogen be injected into the blood, its action is somewhat different from that when absorbed from the intestine; it invariably produces inflammation or irritation of the lungs.

The action of phosphorus upon the mucous membrane of the stomach is, according to Dr. Hoffman (*Ann. d'Hygiène*, Oct., 1872, from *Vierteljahrsch. f. gericht. Med.*, xii., No. 2), of two kinds, local and general. The local action is due to the oxidation of a small amount of phosphorus in the stomach, as mentioned above, phosphoric acid being formed, the amount depending upon the amount of oxygen in the stomach; but generally this action is not extensive, the phosphoric acid not being as active as the ordinary mineral acids. The general action is that of fatty degeneration of the glands, taking place without regard to the surface from which the phosphorus is absorbed, and commencing within twenty-four hours after its ingestion or absorption. The glands are swollen and filled with a finely granular substance, appearing whitish by reflected light, and greyish yellow by transmitted. Then the cells become swollen, filling the ducts, the nuclei become less and less visible, and the canal becomes filled with a homogeneous, opaque mass, which is not rendered clear by acetic acid. The mucous membrane itself appears grayish-yellow and slightly thickened, owing to the swelling of the glands. Later, fatty drops exude from the mass which fills the ducts. This mass gradually becomes softer and softer, until, finally, nothing can be seen except a granular detritus, and the mucous membrane then appears yellow.

Experiments undertaken by O. Schifferdecker in regard to the analysis of tissues for phosphorus by means of Mitscherlich's apparatus (*Fres. Zeitsch.*, 1873, Heft 3) show that by distilling organic substances, or only water containing phosphorus, until phosphorescence is no longer visible in the condenser, only a part of the phosphorus passes over into the receiver, about one fourth of it being oxidized in the retort or flask, and remaining there. The proportion which passes over and can be estimated as phosphoric acid in the distillate is variable, being usually from one-half to three-fourths of the amount originally in the retort.

*Combination of the Alkaloids with the Biliary Acids.*—W. F. DE L'ARBRE (*Fres. Zeitsch.*, 1872, Heft 4, from *Pharm. Centralb.*, 1872, p. 177) has studied the action of the bile and the biliary acids upon the alkaloids, and has found that the alkaloid and the biliary acid unite with each other, when bile or a solution of a biliary salt is added to a solution of any of the soluble salts of the alkaloids. In the case of strychnia, quinia, quinidia, cinchonina, brucia, veratria and emetia, the compounds formed are with difficulty soluble in water, but are quite soluble in an excess of bile, or solution of biliary salt. The compounds formed with morphia, nicotia and conia are, however, easily soluble in water. The glycocholates of strychnia and morphia, the taurocholate of morphia, and the hyoglycocholate of brucia are crystalline; but the remainder, so far as observed, are amorphous. The difficult solubility of some of these compounds is offered as a possible explanation of the accumulation of some of the alkaloids in the liver, and hence the advantage of choosing that organ in analyses for absorbed organic poisons.

*Detection of Digitalin in Chemico-legal Analyses.*—HEINRICH BRUNER (*Ber. d. deutsch. Chem. Gesell. zu Berlin*, 1873, Heft 3) proposes a new test for digitalin, based upon the fact that this principle is a glucoside, yielding glucose by decomposition. The test recommended is Pettenkofer's test, concentrated sulphuric acid and bile, or a solu-



tion of biliary acids, being added to the suspected substance. If digitalin is present, it will be decomposed by the sulphuric acid and glucose formed, which will produce the characteristic cherry red or violet color. This test, the author states, is much more delicate than the sulphuric acid and bromine test, which is very delicate when we have the pure substance to work with, but is rarely satisfactory when applied to the extract obtained from animal tissues by the Stas-Otto process. (Extraction of the acid residue of the alcoholic extract with ether, first while still acid, and again after rendering it alkaline.) From the acid residue, the ether removes the largest part of the digitalin as a resinous mass, in which the sulphuric acid and bromine test is rarely successful. A small amount is removed by the ether after the residue is made alkaline; but delphinin is also removed from alkaline solutions by ether, and behaves like digitalin when treated with sulphuric acid and bromine. The residue, obtained after treating about a quart of beer to which was added, in one instance, 0.05 grm. (about  $\frac{1}{2}$  gr.) and in another 0.03 grm. ( $\frac{1}{4}$  gr.) by the Stas-Otto process, did not respond to the sulphuric acid and bromine test, while a small portion of it gave a good reaction for sugar by Pettenkofer's test. This test will serve to distinguish digitalin from vegetable alkaloids, and the physiological test from the other glucosides which behave like digitalin with sulphuric acid and bile.

The *Journal de Chimie Médicale* (May, 1873) gives the properties of crystallized digitalin, and the process adopted by Natielle to obtain it from the powdered leaves, a process which can be used, with certain unimportant modifications, to extract it from animal tissues in cases of poisoning. Digitalin crystallizes in short and delicate needle-shaped crystals, and possesses an intense and persistent bitter taste. It is but slightly soluble in water, soluble in twelve parts of cold and six of boiling alcohol of 90°, less soluble in absolute alcohol, and nearly insoluble in ether. It is soluble to almost any extent in chloroform, which is its proper solvent, and serves as a reagent for testing its purity. It is rapidly dissolved by a solution of chloral hydrate, the solution becoming greenish blue in color. The concentrated mineral acids dissolve it, hydrochloric acid producing an emerald green color, sulphuric acid a green, which, if subjected to the action of bromine fumes, changes to a dark red, nitric acid a yellow, aqua regia a yellow which changes to an obscure green, and a mixture of equal parts of sulphuric and nitric acids produces a rose color which becomes changed to a deep violet. When heated on platinum, it melts, swells up, becomes brown, and disappears without leaving any traces. It contains no nitrogen, but is composed of 51.33 per cent. of carbon, 6.85 per cent. of hydrogen, and 41.82 per cent. of oxygen. The advantages of having such a preparation, which has a definite composition and definite properties, are obvious. Seven and one-half milligrammes (about one-ninth of a grain) were administered to an adult without any toxic effect being produced.

The method of obtaining it from the plant is as follows. The powdered leaves are digested with alcohol of 50°, filtered, and the filtrate concentrated to a weight about equal to the weight of the leaves originally used. This fluid is diluted with about three times its weight of water, when a fatty deposit is gradually formed, which contains nearly all of the digitalin, mixed with digitin and coloring matter. This

deposit is collected on a filter paper, and treated with twice its weight of boiling alcohol of 60°, which dissolves the digitalin and digitin, these being gradually deposited in the form of crystals upon the surface of the alcohol and upon the inside of the vessel, if the solution be placed in a cool place. The crystallization is complete in eight or ten days. These crystals are collected together, washed with a little dilute alcohol to free them from the mother liquor, and then treated with chloroform, which dissolves the digitalin, leaving the digitin upon the filter. The chloroform leaves it, after evaporation, in an amorphous form, but it can be crystallized by treating again with alcohol, and placing in a cool place, when it will crystallize out as before.

*Detection of Brucia, Emetia and Physostigmia in Animal Fluids and Tissues.* PANDER. *Chem. Centralbl.*, 1872, No. 28, pp. 437 and 440.—(From *Beiträge zu dem gericht.-chem. Nachweise des Brucins, Emetins, und Physostigmins in thierischen Flüssigkeiten und Geweben. Dorpat.* 1871). The results arrived at by the author from his investigations with the above alkaloids are as follows.

Brucia can be detected, either after its ingestion or subcutaneous injection, in all of the fluids and tissues of the body, even in those of the fœtus, but it is found most largely in the liver and kidneys. Decomposition of the tissues for three months had no influence upon the brucia. The most delicate test for brucia was found to be Dragendorff's modification of the nitric acid test, namely: one-fiftieth of a milligramme (1 mg. =  $\frac{1}{200}$  grain) was dissolved in sulphuric acid in a watch glass, and a drop of nitric acid allowed to mix slowly with this solution; a rose red color is first produced, changing to an orange, and then to a yellow; stannous chloride or ammoniac sulphide produces in this mixture a reddish violet color, if the amount of brucia present equals one-tenth of a milligramme. A solution of iodine in iodide of potassium (Liquor Iodini Comp. U. S.) is the most delicate precipitating agent for brucia, a kermes brown precipitate being produced, if the solution contains  $\frac{1}{10000}$  of its weight of brucia, or an orange red one, if it contains  $\frac{1}{5000}$ . The presence of strychnia does not interfere with the mixed sulphuric and nitric acid test.

Emetia can also be detected in all of the fluids and tissues, but most largely in the stomach, liver and blood. It is partially, at least, eliminated by the kidneys. Decomposition of the tissue destroys the emetia. It was detected in the viscera of cats poisoned with 0.1 grm. (about one and a half gr.) and in some of the organs, if the dose administered were only 0.05 grm. For the detection of emetia, the most delicate reagent is concentrated sulphuric acid which contains molybdic acid. (Each cc. of acid containing 1 mgrm. sodic molybdate, "Froehde's reagent.") A red color is produced which changes to a green, if  $\frac{1}{1000}$  mgrm. of emetia is present. As precipitating agents the most delicate are potassio-bismuth iodide, potassio-cadmium iodide, liq. iodinii comp., picric acid, and phosphomolybdic acid, any of which will precipitate  $\frac{1}{10}$  mgrm. of emetia dissolved in 25,000 times its weight of water.

Physostigmia can be detected in the saliva and bile almost immediately after ingestion. It can also be detected in the blood, liver, stomach and small intestines, both by chemical and physiological tests. It could not be found in the blood after the latter had been decomposing for three months. The behavior of physostigmia with

bromine water, is its most characteristic test, a reddish brown color being produced in a solution of the sulphate diluted 10,000 times; in this way  $\frac{1}{2}$  mgrm. can be detected. Calcic hypochlorite (chloride of lime) gives with one-half to one mgrm., a red color after the lapse of a few minutes. Potassio-bismuth, iodide and phosphomolybdic acid precipitate it, if diluted 25,000 times with water, potassio-mercuric iodide (Mayer's reagent), if diluted 5000 times, and chloride of gold, if diluted 2000 times. Contraction of the pupil was not produced in dogs by amounts less than  $\frac{1}{100}$  mgrm.

The method employed for the isolation of these substances from the tissues and fluids was Dragendorff's, namely: to extract the alkaloid from the tissue with very dilute sulphuric acid, filter, and evaporate the filtrate after neutralizing with magnesia; extract the residue with alcohol of 70 per cent. acidulated with sulphuric acid, filter, distil off the alcohol, and shake the acid residue successively with petroleum ether, benzin, and amyl alcohol; then render the acid liquid alkaline with ammonia, and shake again with petroleum ether. Benzin will remove physostigmia from acid solutions and deposit it after evaporation, and petroleum ether will remove the brucia and emetia from the ammoniacal solution, and deposit them after evaporation.

*Reactions of Quinia and Morphia.*—F. A. FLUECKIGER (*Neues Jahrb. der Pharm.*, Bd. 136), has investigated as to the delicacy of the ordinary test for quinia, and finds that if the fluid be mixed with one-tenth its volume of chlorine water, and then a drop of ammonia water added without shaking, a green zone is first formed which gradually extends through the whole fluid when it contains only  $\frac{1}{1000}$  of its weight of quinia.

If bromine be used instead of chlorine, the test is much more delicate, the green color appearing when only  $\frac{1}{20000}$  of quinia is present. If the fluid contains more than  $\frac{1}{2500}$  of its weight of quinia, bromine produces a precipitate instead of a change of color, and hence is not as useful as chlorine in strong solutions. The bromine test should be performed in a test tube filled one-fifth full of the fluid to be tested, and bromine fumes poured into the tube, till the upper portion of the fluid has absorbed enough of the gas to give it a yellow color, while the lower portion remains colorless; then a drop of ammonia water should be allowed to flow down the side of the test tube gently, so as to float on the surface of the liquid and not mix with it. A green layer is thus produced which changes to a blue, the color being more intense and more permanent than that produced by chlorine water.

Morphia solutions treated with chlorine water and ammonia turn first red, and, finally, brown. The limit of this reaction is one part in 1000 in solution, and hence this is not as delicate as the iodic acid and starch reaction, the limit of which is 1 to 10,000.

If both morphia and quinia are present in a solution, the morphia reaction will be first formed, but we can always obtain the quinia test by diluting to such an extent that the proportion of morphia in the solution shall be less than 1 to 1000.

*Poisonous Action of Substances belonging to the Benzol Group.*—By Dr. STARKOW. *Journ. de Pharm. et de Chim.*, Apr., 1873, from *Virchow's Archiv*, III., No. 4. From these investigations it appears that the nitro-substitution products of these substances, if soluble, are more poisonous than the substances themselves, and produce a special

action upon the blood. The blood of an animal poisoned with binitro-benzol, if subjected to the action of the spectroscope, shows an absorption band between the red and orange of the spectrum, corresponding to the Fraunhofer line C, in addition to the two normal oxyhæmoglobin bands; reducing agents, such as ammoniac sulphide, change the position of this band a little to the right, and ammoniac hydrate causes it to disappear entirely. The blood of an animal poisoned with nitro-benzol (mono-), nitro-aniline, or nitro-naphthaline, shows the same band, but if these substances are mixed with the blood outside of the body, the band does not appear immediately as in the case of binitro-benzol, but only after the lapse of several hours. These mono-nitrosubstitution products are less active poisons than the binitro ones, but are much more active than the simple benzol, aniline, &c., or the chlorine substitution products, as chloro-benzol, none of which give rise to the above absorption band, although chloro-benzol when mixed with blood causes a disintegration of the blood globule, and crystals of hæmoglobin soon appear. Aniline acts on the blood like ammonia and phosphoretted hydrogen, decomposing the hæmoglobin. Nitro-aniline acts partly like aniline and partly like binitrobenzol. The sulphate of aniline always decomposes the hæmoglobin, hæmatin being produced, the peculiar absorption bands of which can be seen with the spectroscope, either in the blood of animals poisoned with it, or in blood to which it has been added outside of the body. The chemical action of nitro-glycerine upon the blood pigment is analogous to that of nitro-benzol, and their toxic action is about the same, three grains sufficing to kill a dog of moderate size in two or three days. Nitric and sulphuric acids act on the blood in a somewhat similar manner to the nitro-compounds, the pigment being decomposed and the hæmatin spectrum produced, an effect which is not caused by hydrochloric or phosphoric acids.

Thus the action of many of the organic nitro-compounds is evidently due to the radical nitryl which they contain, as nitro-glycerine, and the poisonous action of nitro-benzol cannot be due entirely to the formation of aniline within the system, as has been stated by some writers.

*Analysis of Tobacco Smoke.*—The analyses made by EULENBERG and VOHL (*Ann. d'Hygiène*, April, 1873, from *Vierteljahrsh. für ger. Med.*) upset all of the old theories, that the injurious effects of tobacco smoking are due to the presence of nicotia in the smoke. The smoke from tobacco in pipes and cigars was passed first through a solution of potassic hydrate and then through one of dilute sulphuric acid. The former solution was found to contain a mixture of carbonic, hydrocyanic, sulphuric, acetic, formic, metacetic, butyric, valeric and carbolic acids, creasote, and several hydrocarbons. The acid solution contained rosolic acid, ammonia, traces of ethylamine and many of the pyridine bases, to the last of which the injurious action is due. The bases found were pyridine  $C_5H_5N$ , which is more abundant in pipe than in cigar smoke, picoline  $C_6H_7N$ , lutidine  $C_7H_9N$ , collidine  $C_8H_{11}N$ , which is more abundant in cigar than in pipe smoke, parvoline  $C_9H_{13}N$ , coridine  $C_{10}H_{15}N$ , rubidine  $C_{11}H_{17}N$ , and a residue corresponding to viridine  $C_{12}H_{19}N$ . As will be seen, the more volatile of the bases, as pyridine, were most abundant in pipe smoke, while the less volatile, as collidine, were most abundant in cigar smoke.

The physiological action of these bases was not tested separately,

but only that of a mixture of those which volatilize under 160° C., and of those which volatilize between 160° and 250° C. Both of these sets of bases, like nicotia, produced contraction of the pupil, difficult respiration, general convulsions and death; and, upon post-mortem examination, the respiratory passages and lungs were found congested. They do not act as rapidly as nicotia. Those volatile at a low temperature were more active than those which were only volatile at a high temperature, which explains the fact that a larger amount of tobacco can be smoked in the form of cigars than in a pipe.

Bases produced by the combustion of the dandelion, willow wood, stramonium and pure picoline obtained from Boghead coal were also tested, and found to differ in degree only from the action of the tobacco bases, the vapor of pure picoline being poisonous, and producing great irritation of the respiratory passages, slight convulsions, and death.

From the results thus obtained, the authors think that the action of opium, when smoked, is not due to its natural alkaloids, but to similar combustion products, the variation in the action of the opium and tobacco smoke being due to the production of different bases in the two cases.

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### Reports of Medical Societies.

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ESSEX NORTH DISTRICT MEDICAL SOCIETY. MORRIS SPOFFORD, M.D., SECRETARY.

*Chronic Inflammation of the Uterus.*—Dr. Carleton, of Lawrence, after giving the history and symptoms of the disease and the prevailing views of its pathology, expressed doubt whether it is possible to make a distinct differential diagnosis, which would be at all certain, between the disease affecting the mucous membrane alone, and that involving the parenchyma of the organ. For practical purposes it is sufficient to separate the disease at the internal os, treating it either as inflammation of the neck, or of the body of the womb. The introduction of the sound is the crucial diagnostic test between these two conditions. The prognosis is much more favorable in the former than in the latter case. In treatment, regard must be had to constitutional and hygienic measures, but local treatment is the *sine qua non*. The methods of local treatment in use were described, but the application of astringents and caustics in solution by means of cotton rolled upon the uterine probe, is to be preferred. Previous to this application, the complete perviousness of the canal must be secured, by means of sponge tents, if necessary; and the pressure produced by the sponge upon the diseased tissue is often of much benefit. Pessaries are sometimes of use when the uterus is retroverted, but this instrument, like all useful means of treatment, is liable to much abuse. Pregnancy is often of much benefit to a diseased uterus, if care be taken during convalescence, that perfect involution of the organ be secured.

*The Laryngoscope.*—Dr. F. I. Knight, of Boston, present by invitation, made some remarks on the use of the laryngoscope in general practice. He said that all physicians would admit the importance of inspection of a part supposed to be affected, and yet very few had adopted the use of the laryngoscope. This he attributed partly to the

difficulty of acquiring the art of using the instrument without some special instruction, and partly to the confusing multiplication of varieties of instruments, which discouraged one from undertaking the use of any of them.

Dr. Knight said that he hoped that his remarks and demonstrations would induce some of the members to use the laryngoscope, at least for the purpose of diagnosis. One must not expect to operate within the larynx, except after long and patient practice. Before showing the use of the instrument, Dr. Knight said that he would refresh their knowledge of the anatomy and physiology of the larynx, by showing them some dissections, one of the cartilages of the larynx and trachea with their ligaments, and another of the muscles of the larynx. He also showed a beautiful section of the skull, showing the posterior nares, soft palate, lateral walls of the pharynx, and the larynx in situ. He gave briefly the action of the different muscles during respiration and phonation, as now generally understood. He then showed the best form (Türk's) of head reflector, and laryngeal mirror, and demonstrated, upon some of the members of the society, the proper method of using them.

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THE TREATMENT OF MALIGNANT PUSTULE.—Dr. Belles has had an exceptionally large experience, as well as a remarkable success, in the treatment of malignant pustule, living in a district of Portugal where large herds of cattle are raised. His method of treatment consists in making a crucial incision across the whole diameter of the gangrenous lozenge, and then cauterizing the incisions with chloride of antimony; the cauterization to be continued till blood ceases to flow. This operation inflicts no pain, inasmuch as the gangrenous part is completely insensible, and may be freely laid open without the administration of an anæsthetic. In cases in which the incision and cauterization have been put into practice late in the disease, and where the disorganization of the tissue is far advanced, the elimination of the gangrenous eschar which results from the operation is retarded by a local atony of the parts. This can be met with success by the applications of hot cataplasms soaked in wine.—*The Clinic*, May 24, 1873.

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METHOMANIA.—Dr. C. B. Gilbert, in an article under this title, observe. (*Detroit Rev. Med.*, June, 1873):—

"The influence of psycho-therapeutics is too tardily acknowledged, and too infrequently practised. It seems almost incredible that a man could, by mere self determination, resist the destructive power of rabies, when it has once invaded the system to such a degree as to cause constriction of the throat and difficulty of swallowing. But this incredibility will lessen when it is considered that a mental influence potent enough, acting *ab initio*, to produce a given disease, may also arrest it.

"This truth is forcibly illustrated by the case of Mr. Crosse, who was severely bitten by a cat. Three months afterwards, he was attacked by rabies; and, looking the disease squarely in the face, he determined to throw it off; so, taking his gun, he went in search of game; though finding none, yet every step was accompanied by a mental resolve that he would not succumb to the disease. On returning home at evening, he felt much better, and in the course of a day or so was quite well."



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### Bibliographical Notices.

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*A Handbook of Medical Electricity.* By HERBERT TIBBITS, M.D., L.R.C.P. Lond. Philadelphia: Lindsay & Blakiston. Pp. 160.

DR. TIBBITS'S Handbook certainly deserves a welcome from the medical public, to which it is addressed, and we entirely sympathize with the author in the hope that it will do something towards making every medical man acquainted with the fundamental principles of electro-therapeutics and the use of electrical instruments. That accomplished, the next step will be to do the same for a body of professional nurses, who shall take the details of application off the hands of the busy practitioner, who, otherwise, could make no more use of electricity than now.

The first part of the book is taken up with descriptions of instruments, all of foreign make, and for which we have excellent substitutes on this side of the water. The second part treats clearly and thoroughly of the details of the application of electricity, the choice of electrodes, &c., and it is in this chapter especially that the influence of the teachings of Duchenne are seen, whose chief work, "*De l'Electrization Localisée*," Dr. Tibbits is well known to have recently translated.

A few pages might have been added, to advantage, to the chapter on the diagnostic uses of electricity, which comes next, in order that the reader might be left with clearer notions of the important differences, in respect to the electrical reaction of the nerves and muscles, between paralyses of cerebral, spinal and peripheral origin.

Furthermore, other observers do not bear out Duchenne and Dr. Tibbits in the statement that, in cases of rheumatic paralysis of all other nerves except the facial, the electrical reaction of the nerve and muscle does not diminish.

The last part of the book, which is devoted to electro-therapeutics and electro-physiology, is instructive and interesting, but suffers from too much contraction, especially when electro-physiology is the theme.

The best class of unbelievers in such matters as these are best converted by scientific arguments, which, in this case, are not so numerous but that all of them might find a place even in a handbook. He says, for example, p. 109, that "*Benedikt contends\** that the voltaic current will *directly* affect the brain and cord," whereas certainly after the experiments of Erb, Burckhardt and Ziemsen, this is no longer to be considered as a point of contention, but as an established and important fact.

Dr. Tibbits, as well as Dr. Russell Reynolds,† speaks in high terms of the use of frictional electricity in certain cases (hysterical aphonia, some forms of tremor and neuralgia), and the former recommends charging the patient with positive electricity from the voltaic (galvanic) battery, a mode of treatment which is entirely new to us here.

Some excellent plates, copied mostly from Duchenne's work above alluded to, are printed in the text.

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\* Italics are ours.

† Lectures on the Clinical Uses of Electricity. Lindsay & Blakiston.

*An Appeal to Physiologists and the Press.* By H. FREKE, M.D., &c. Dublin. 1862.

*The Dependence of Life and Decomposition.* By HENRY FREKE, M.D., &c. Dublin. 1871.

THE author of the above pamphlets is one of those writers who attribute all adverse criticism of their works to malicious persecution on the part of their reviewers. Dr. Freke having published, in 1848, certain views on organization and life, his critics were not slow in pointing out their want of novelty, while admitting that the treatise would be read with interest; "new relations being developed among ideas that were previously familiar, and various suggestions being thrown out which may be profitably pursued." Exasperated at this reception of his labors, and failing to obtain satisfaction from the medical press, Dr. Freke published his "Appeal" in 1862. To this he adds a postscript, in 1872, addressed "to the physiologists of America," being induced thereto by an intimation that active measures have been adopted by his persecutors "to render as abortive in America anything I may hereafter publish as my former publications have been already so rendered in England." He also informs us that one of his former critics, whom he compares to "an assassin who has once inflicted a stab in the dark," "is at the present moment (Oct., 1872) traversing the United States of America." Suspecting that this gentleman may make an effort to ruin his reputation as an author in this country, he appeals "to the generosity and sense of justice of American physiologists against such cowardly, assassin-like persecution."

To decide upon Dr. Freke's claim to originality is not altogether easy. From an examination of his views as contained in the pamphlets before us, it would seem that he has done little more than clothe old ideas in new language, but the vague and abstract terms which he employs and the absence of all concrete illustrations of his meaning render it difficult to pronounce with certainty upon this point.

Should Dr. Freke venture upon further publications, as he intimates his intention of doing, it is to be hoped that he will bear in mind a fact which he has thus far seemed strangely to forget, viz. : that questions such as he discusses, can only be settled by careful and close reasoning applied to *observation and experience*. B.

#### BOOKS AND PAMPHLETS RECEIVED.

*The Local Use of Tar and its Derivatives, including Carbolic Acid, in the Treatment of Skin Diseases.* By L. D. Bulkley, M.D. Reprinted from Dr. Brown-Séquard's Archives. Philadelphia: J. B. Lippincott & Co. 1873.

*The Spectroscope and its Application.* By J. Norman Stockyer, F.R.S. London and New York: Macmillan & Co. Pp. 117. (From the Publishers.)

*Strictures of the Urethra. Results of Operation with the Dilating Urethrotome, with Cases.* By F. N. Otis, M.D. (Re-printed from the New York Medical Journal.) 1873. Pp. 20.

*On the Influence of Age on the Causation of Skin Disease.* By Balmano Squire, M.B. London: F. & A. Churchill. 1873. Pp. 4. (From the Author.)

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### Abstracts and Intelligence.

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ADHERENT PLACENTA RETAINED THREE WEEKS WITHOUT PUTREFACTION.—Specimen exhibited before the Morgan County Medical Society, with remarks, by DAVID PRINCE, M.D., Jacksonville, Ill.—The report of Dr. H. Wardner, of Cairo, in the number of *The Examiner* for March 15, induces me to report the following case, in which the placenta maintained its attachment and its vitality for three weeks from the time of the expulsion of a five months' fetus.

Mrs. M., of hysterical temperament, but corpulent habit, mother of several children, patient of Dr. H. Jones, became unusually large after conception, and continued to have sanguineous discharges with the return of each monthly period. Doubt was thus thrown upon the nature of the case until one morning, going across the yard for what the patient supposed a call for urinary evacuation, a sudden pain seized her, and a fetus was expelled. Grasping this through her clothing she walked back into the house and placed herself upon a lounge.

Owing to the sickness of Dr. Jones, the care of the patient was imposed upon me. About half an hour after this catastrophe, the fetus was found attached by the umbilical cord, but a very slight force detached the cord so that the best guide to the placenta was unfortunately lost.

The uterus was explored with a placenta forceps, and none being found it was supposed that it must have been expelled and thrown away unobserved. The patient rapidly recovered and walked about the house, supposing that all trouble had passed by.

Just three weeks from the time of the abortion, this lady was overtaken by a profuse hæmorrhage which subsided spontaneously. The horizontal posture was carefully maintained, and ergot was given. In a few hours a placenta, with its membrane complete, only showing a rent, was expelled in connection with coagula.

There was no more hæmorrhage; and though the skin was very pale from loss of blood, the recovery was speedy and complete. The placenta was altogether free from putridity; was compact, and destitute of apparent disease. One margin was dark with the presence of coagula, indicating the probable fountain from which the blood had gushed.

The location of the placenta upon the inner uterine surface cannot be certainly made out; but it is probable that it was so far toward the neck that the margin was detached by the expansion of the uterus with each monthly congestion.

It is possible that, in connection with the monthly hæmorrhages, there may have been such a change of the uterine surface of the placenta as to destroy the line of cleavage.

If the stem of a leaf is wounded just at the line at which it will subsequently separate from the branch, it may readily be conceived that the healing process may obliterate this line of separation, so that the leaf, instead of falling off at the proper time, will maintain its vitality for a long period, and perhaps finally shrivel up without separation.

The change which occurs in the leaf-stem may occur in the embryo-stem, permitting its base, the placenta, to maintain its vitality for several weeks after the falling of the embryo-leaf.

Dr. Hodge, in his folio work on Obstetrics, says that there is abundant proof that the placenta has adhered and maintained its vitality for weeks and even for months after the expulsion of the fœtus.

One of the practical inferences from this case is that it is not imperatively necessary to remove an adherent placenta by forcible means. Like the base of a polypus, it may be left to shrivel and separate by a natural process, which saves the uterus from the infliction of laceration and contusions.—*Chicago Medical Examiner*.

**TRANSFUSION OF BLOOD.**—This operation has been performed recently in London in two cases, both with a certain measure of success. The first case was one of leukæmia, under the care of Dr. Andrews, at St. Bartholomew's Hospital; the second operation was performed on a purpuric girl, a patient of Dr. West, at the Hospital for Sick Children, who was dying from loss of blood. The operation in the first patient was successful, and will probably be repeated once, at least, in the course of the next month or two; while in the other case, though terminating fatally a few hours after the operation, the patient was undoubtedly temporarily, and almost against hope, relieved by the adopted means.—*British Medical Journal*.

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## Correspondence.

### CLIMATE OF DENVER, COLORADO.

**MESSRS. EDITORS,**—Dr. H. Norton, of Detroit, Michigan (*Detroit Review of Medicine and Surgery*, September, 1872), submits the enclosed\* general observations concerning the climate of Denver, the result of a residence of two months in that city, April and May, 1872.

Denver is situated at the junction of Cherry Creek with the South Platte, in latitude 39 deg. 40 min.—5,317 feet above the sea level. Now, as regards the Doctor's account of this new city, he commences his article by stating that the brilliancy of the light is very disagreeable to those having a very sensitive retina, often necessitating the use of colored glasses. As to the above, the objection is not more common to Colorado than to any open country; less so, indeed, than in Kansas, Nebraska or Iowa. In the two latter States, I have practised seven years, and in Denver eleven years, so that I may, perhaps, judge more correctly of facts than Dr. Norton, whose residence in Colorado did not exceed two months. He also stated that the diminished atmospheric pressure so affects the physical condition of the eye that there is required an increased power of accommodation. This statement has no foundation, and is apparently a peculiar theory of the Doctor's, when men in their endeavors to hatch up something fall into a bad way of wandering.

Again, he says: the city having on one side an immense plain to be heated by the sun's rays, and on the other a lofty range of mountains covered with perpetual snow and ice, great and sudden changes frequently occur. In the summer months, when the sun is brightest and the heat greatest, very little snow and ice can be seen on the great range west of Denver. In July and August there is but little rain, and the heat is never excessive—unless occasionally in the middle of the day. Even then, Denver has this peculiarity, that the heat is only felt under the direct rays of the sun. Indoors,

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\* We do not re-print this, as the various points are made out with sufficient clearness in the letter.—Eds.

or in the shade, it is always cool and fresh. Upon this point I insert the following government record for 1870, 1871 and 1872, which is mathematically correct, and therefore conclusive. Also, an article taken from one of the daily newspapers of Denver in relation to the climate of this city during the last winter.\* Even in midsummer, the nights are so cool that a blanket is almost always necessary, which cannot be said of the Eastern, Middle or Western States.

During the heated period, Dr. Norton says that cold winds, called sand storms, are frequent, so that persons riding any distance from home for pleasure are obliged, even in midsummer, to take with them thick garments and wrappers in case they be surprised by one of these winds, or else they run the risk of being dangerously chilled. Who told the Doctor so? Or did it emanate from the same false theory with which he started? Indeed, the assertion has no foundation or truth in it whatever, which every old or new inhabitant of Denver can asseverate. We have, without doubt, wind storms, which reduce the temperature several degrees; but never to the extent of chilling either the weak or the strong, by any sudden reduction of a previously warm temperature. As a rule, these wind storms do not last over five or ten minutes, after which everything is as calm as if nothing had occurred. Before persons can get their coats or cloaks well on, everything is over.

Winter (according to the article in question) commences as early as the end of September, and, some years, continues as late as the first of May, being a season of bright sunshine, clouds, rain, hail, snow and wind, while the mercury at times sinks as low as  $42^{\circ}$  below zero. To use a phrase more pointed than elegant, the above story seems to have been made out of whole cloth.

We very seldom have any winter before the 25th of December or 1st of January. It is true, we have, at times, snow-falls in the month of November, but they are always slight, and the snow seldom lies on the ground more than a day or two. As for rain or hail, it is very rare indeed; and never in the recollection of the oldest inhabitant has the thermometer been known to fall as low as  $42^{\circ}$  below zero. If Dr. Norton had stopped after the words "bright sunshine," he would have been within the bounds of truth, and have fairly described the average Colorado winter.

Nasal catarrh is not an indigenous disease of this climate. Most of the cases here are, like consumption, imported, generated in such a climate as Michigan, Illinois, Indiana, Ohio, New York and the New England States. The scabs that the Doctor speaks of in cases of catarrh are the result of the dry atmosphere; rather curative than otherwise, if the patient looks after his nostrils and applies cold water locally and each day. The number of cases cured here, compared to that of those in the more humid climate of the States, I can safely say is as three to one.

The curative effects of a residence in Colorado, in spasmodic asthma, are rapid and truly miraculous; if not at Denver itself, in the higher altitudes of

\* We have space only for some extracts:—

TEMPERATURE.

	Highest.	Lowest.	Mean.
1870 { June - . . . . .	94°	48°	68.2°
July - . . . . .	98	53	74.2
August - . . . . .	97	45	64.8
1871 { June - . . . . .	97	56	74.9
July - . . . . .	97	58	78
August - . . . . .	96	54	75.2
1872 { June - . . . . .	97	49	69
July - . . . . .	93	54	71
August - . . . . .	94	52	72

In December, 1870, the lowest temperature was  $-18^{\circ}$ , and in January, 1872,  $-26^{\circ}$ ; in no other months during the three years was it below  $-9^{\circ}$ . The mean temperature in winter is apparently about  $30^{\circ}$ .—Eds.

the mountains in its vicinity. This holds good even in those cases where there is a complete emphysematous condition of the lungs, if the patient will stay long enough to allow the climate a fair trial.

Also, cases brought on and aggravated by organic disease of the heart, uterine derangements and nervous prostration are, as a rule, cured, the few exceptions being hardly worth taking into account. In regard to chronic bronchitis and consumption, I must say that many have come here to die, and why? Because their last days are upon them, and they are ready, like a drowning man, to grasp at a straw. However, if they come here in time, either in the first stage of the disease or with only the predisposition thereto, they will, in the vast majority of cases, be cured. Even if patients come here in the second stage of phthisis, they will live longer, and with less suffering, than it is possible for them in the States. I never, however, advocate the coming here of those who are almost in *extremis*—even though it may be true that they will here pass away with less suffering and greater ease than in the East. The journey is too great, with its necessary fatigues, and the promises in such cases are without foundation; although there is often a slight gain for a short season.

Dr. Norton says that the coming into this high altitude is especially dangerous for those who have disease of the heart.

It is, I believe, patent that high altitudes are not favorable to organic disease of the heart. Nor has this climate ever been advocated for these cases.

Dr. Norton also mentions, in his article, that acute rheumatism is very prevalent in this climate. According to the experience of the practitioners of Colorado, this statement is quite erroneous. Rheumatism is much less frequent here than I have found it in Ohio and Iowa, in both of which States I formerly practised—in the former six years and in the latter seven years—while in Colorado I have practised eleven, always having a large run of patients. If there is any form of rheumatism more prevalent here than in the States, it is a sub-acute form, generally localized in some joint or limb, and without swellings.

As for the two or three quoted cases of congested kidneys, with albuminuria, due to sudden changes of air, if the Doctor had been a close observer he would, without doubt, have learned that they were cases sent here from the States to seek a cure in our healthy climate.

Finally, came the most remarkable statement, that the high altitude of Colorado seems eminently suited to persons of apoplectic tendencies. We should here be glad of an explanation. Perhaps we are behind the times, and ignorant of recent advances in medicine. He speaks of the climate as being prostrating instead of tonic, and that a quantity of stimulants can be borne here greatly in excess of what is tolerated in the East.

The Doctor speaks of the so-called mountain fever, a species of remittent, with typhoid tendencies, of frequent occurrence, and sometimes fatal. If Dr. Norton thinks this fever remittent, let him come here and try the effect of quinine upon it, which is acknowledged to be the sheet-anchor in the treatment of such a disease. Let him judge from his own success, and he will be obliged to say, instead of "sometimes fatal," "always" so.

This "mountain fever" is a pure type of typhoid, the same as is found in any of the New England States, and requires the closest watching to save the patient. The average mortality is 75 per cent. Yet it is not so common as the article of which we speak would seem to indicate. Some years, very few cases occur, and again it is more prevalent. New comers are the persons most liable to it; the complete changes in air, living—i. e. food and water—and perhaps excessive use of liquors, seeming to lead to it. The older inhabitants are seldom attacked.

In conclusion, let us speak of one of the *virtues* of Colorado, and, indeed, a very great virtue. I refer to the entire relief which this Territory affords to patients suffering from "Hay Fever," or "Hay Asthma," as it is sometimes called—a disease noted for its obstinate and yearly return. Vide a former communication, this JOURNAL, Jan. 30, 1873.

W. F. McCLELLAND.



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### Medical Miscellany.

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ON July 5th, ninety-four persons were arraigned at the Municipal Court of Boston for drunkenness.

IN Boston one cannot sell beer and can sell oxalic acid. In Vienna, one cannot sell poison and can sell beer. We send schoolhouses to Vienna.

"SMART.—An American paper says, 'Massachusetts is noted for two things: intelligence and patent medicines.' We presume the intelligence is displayed in selling, not in taking, the physic."—*Fun*.

WE are sorry to learn that the female students at Zurich, of whom we have had such glowing accounts, are too immoral even for Russia, who has recalled her daughters to be redeemed by home influences.

THE celebrated anatomist, Professor Hyrtl, exhibits a series of his preparations in the International Exhibition at Vienna. Of two series which he exhibited at the London Exhibition in 1862, and the Paris Exhibition in 1867, one was bought by an American university.

MEDICAL REGISTER AND DIRECTORY OF THE UNITED STATES.—Circulars desiring information of individuals and institutions are being sent out. The Directory of the first eleven States and Territories is already with the printer. Information should be sent to S. W. Butler, M.D., 115 S. 7th St., Philadelphia, Pa. We hope the circular will receive due attention.

A LAUDABLE EXAMPLE.—The authorities of Leon in Spain have, on the suggestion of Dr. Siso y Ruiz, included in their public estimates for the year the sum of 1,000 pesetas (£42), to be applied in the purchase of vaccine lymph, which will be distributed through the province, with the object of insuring the vaccination of the poor to as great an extent as possible.—*London Medical Record*.

WE have some other works on our table which we are for the present unable to notice at length. Of these, we would mention with approval the new *Report of the Massachusetts State Board of Health*, which teems with information of great value to all sanitarians. The manner in which the medical officers of that Board carry on their investigations deserves our warmest praise. The inquiry into the origin of consumption in this instructive blue-book is an example of this.—*The Doctor*.

CHOLERA AND QUARANTINE.—The following questions are proposed for discussion at the International Medical Congress, to be held in Vienna:—1. Does the present state of our experience show that measures of separation and quarantine are effective and worthy of being recommended? 2. Where and in what form should quarantine regulations come into force, and what international combinations should be formed for this purpose? 3. What is the value of disinfection, and what means of disinfection should be recommended for general use?—*London Medical Record*.

AT the Pathological Society of Dublin, Mr. Edward Hamilton, in the absence of Mr. Bookey, showed a tumor from the abdomen of a woman, aged about 60. It occupied the right lumbar region, resting on and causing atrophy of the psoas muscle. It consisted of the capsule of the right kidney in a state of extreme adipose hypertrophy. A large calculus was imbedded in the pelvis of the kidney. The ureter and bladder were healthy, and the other kidney was perfectly normal. The mass weighed 1 lb. 6 oz. and 2 drs. No other abnormal development of adipose tissue was met with in the body.—*British Medical Journal*.

ADVICE "TO THE LADIES THEMSELVES," on their application for "mixed classes" at Birmingham; by the *London Medical Times and Gazette*, June 7th, 1873:—

"We have always, in this journal, recognized your right to make yourselves acquainted with anatomy, physiology, surgery, medicine and obstetrics, if you please; and to practise medicine if you can prove yourselves qualified to do so. We do not think you are wise in wishing to do so, but you have the right to form your opinion on this point. But society has its rights as well as yourselves, and it is an outrage upon common decency that you should study these subjects in the company of young men. If you are determined to be surgeons and physicians, you can only become so with a due regard to public propriety and decency by establishing your own educational and examining institutions."

And may we not also add, *your own medical societies?*

A CASE OF HYDROPHOBIA.—An inquest was held last week at Hampstead, by Dr. Lankester, on the body of Mrs. Revitt, aged 29, who had died of hydrophobia. The husband of deceased, a butcher, said that one Saturday morning, a few weeks ago, he left home about six o'clock to attend market, leaving the door leading from the shop to the staircase ajar, so that his wife could hear when the shopman arrived. On his return, his wife told him that she was awakened by a slight noise, and saw a dog licking the face of a child which was asleep in a crib by her bedside. She tried to drive the dog away, and it bit her hand. She then seized the dog, carried him to the window on the second-floor landing, and threw him out into the yard. Dr. Cooper Rose stated that he attended the deceased on the morning the dog bit her. She had a lacerated wound on the left thumb and scratches about the hand, which he cauterized. The wound healed up, but the thumb was torn under the nail, and was very troublesome. On Saturday week last he was again sent for, but did not exactly know what was the matter, but on the following day the symptoms were fully developed. She died from hydrophobia. The jury returned a verdict in accordance with the evidence, and desired the coroner to forward to the police authorities a requisition, calling their attention to the large number of stray dogs, which are a source of great and increasing danger to the public, in order that the necessary steps may be taken to put an end to the danger and nuisance.—*British Med. Journal*.

**MORTALITY IN MASSACHUSETTS.**—Deaths in fifteen Cities and Towns for the week ending June 28, 1873.

Boston, 102—Charlestown, 15—Worcester, 19—Lowell, 8—Milford, 2—Salem, 12—Lawrence, 11—Lynn, 16—Gloucester, 15—Taunton, 2—Newburyport, 1—Somerville, 4—Fall River, 18—Haverhill, 2—Holyoke, 12. Total, 239.

Prevalent Diseases.—Consumption, 33—cholera infantum, 14—pneumonia, 13—scarlet fever, 10.

Holyoke reports six deaths from smallpox.

GEORGE DERBY, M.D.,  
Secretary of the State Board of Health.

DEATHS IN BOSTON for the week ending Saturday, July 5th, 1873. Males, 81; females, 82. Anemia, 1—accident, 6—apoplexy, 2—disease of the bladder, 2—inflammation of the bowels, 1—bronchitis, 4—congestion of the brain, 2—disease of the brain, 6—burned, 1—calculus, 1—cancer, 3—cholera infantum, 19—consumption, 26—cynosis, 3—cerebro-spinal meningitis, 4—convulsions, 1—debility, 2—diarrhoea, 2—dropsy, 1—dropsy of the brain, 3—diphtheria, 1—erysipelas, 1—exhaustion, 1—scarlet fever, 9—typhoid fever, 5—gastritis, 2—disease of the heart, 5—intemperance, 1—disease of the kidneys, 2—disease of the liver, 2—congestion of the lungs, 1—inflammation of the lungs, 9—measles, 2—old age, 5—premature birth, 3—puerperal disease, 1—paralysis, 2—pyæmia, 1—peritonitis, 2—rheumatism, 1—suicide, 1—scrofula, 1—sunstroke, 2—tabes mesenterica, 3—unknown, 11.

Under 5 years of age, 61—between 5 and 20 years, 27—between 20 and 40 years, 33—between 40 and 60 years, 21—over 60 years, 21. Born in the United States, 111—Ireland, 34—other places, 18.